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I, JULIE BILLINGSLEY, TEAM LEADER EXAMINATION SUPPORT AND SALES hereby certify that annexed is a true copy of the specification in connection with Application No. 2003901575 for a patent by ENVELOPMENTS PTY LTD as filed on 07 April 2003.



WITNESS my hand this  
Twenty-second day of April 2004

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PROVISIONAL SPECIFICATION FOR THE INVENTION ENTITLED:

"METHOD OF FORMING A DOCUMENT SET"  
This invention is described in the following statement

## FIELD OF THE INVENTION

The present invention relates to processes for generating bulk mail out items.

## BACKGROUND OF THE INVENTION

- 5 For organisations having a large number of customers to whom accounts or marketing material are mailed, it is clearly impractical to generate this mail manually. Accordingly, the process of printing material pertaining to an individual customer such as billing information and then inserting this printed material into an envelope which has been appropriately addressed
- 10 has been automated for some time.

Commonly, the insert material will be printed on standard cut sheet such as A4 using high speed industrial digital printers. The insert material is then folded and inserted into standard closed faced envelopes using highly specialised handling equipment. In some instances the envelopes may already be pre-printed with fixed information such as a company logo or a reply paid address. After insertion, the envelope is then printed with the corresponding address related to the personalised information contained in the envelope. These processes are capable of producing between 30 to 100

- 15 bulk mail out items per minute.
- 20

Clearly, at such high processing speeds it is important to be able to have a system for online monitoring. Referring now to Figure 1 there is shown a typical bulk mail item processing and integrity checking system in detail.

- 25 Print file 10 containing names, addresses and any other personal information relevant to the mail out is formed from information contained in database 1. This file also contains instructions for generating a unique machine readable code such as a barcode for each sheet of material to be printed. This information is provided 11 to the printer 20 which prints standard cut sheet to
- 30 form personalised documents 30 comprised of a number of insert sheets

which are then inserted into envelopes which are fed into the inserter 40 from a separate envelope supply 50.

To provide for online integrity checking of the system a process data file 120 is generated from print file 10. The process data file 120 contains a unique check reference for each printed sheet in addition to the corresponding addressing information. Before insertion into the envelopes the personalised documents 30 are scanned 90 and the machine readable code information is compared with the process data file 120 to verify that the correct documents have been printed. Confirmation of the printing step results in the corresponding address being provided to the envelope printer 60 for printing of the envelope resulting in a completed mail out item 70. This process necessarily assumes that the personalised documents 30 have been inserted 40 correctly into the envelopes. Whilst the envelopes 50 may have fixed information such as logos and reply paid addresses printed on them prior to address printing 60, there is no individual machine readable code which can be used for envelope tracking before the step of address printing 60.

As standard laser printers are often unsuitable for printing multiple layer items such as envelopes, the envelope printer 60 is typically an inkjet printer. Inkjet printers have a number of associated cost and quality issues when compared to laser printers. The mail out item 70 is then provided to the mail system 80. Optionally, an address reader 75 will read the address printed on the envelope so that a record of completed mail out items which are ready to be mailed can be maintained.

There are a number of serious disadvantages with this process. After insertion 40 of the personalised documents 30 into envelopes 50 there is no means to check that this step has been performed correctly before printing 60 of the envelope. If scanning 90 of the code and checking 91 with the process data file has highlighted a problem before insertion then these documents may be

out sorted 100 as shown in Figure 1. However, once the envelope has been printed 60, the only way the process can be audited is by manually sampling 71 the mail out item 70 and scanning the code on the personalised documents 90 and comparing 91 this with the address on the envelope as set out in the 5 process data file 120. If an error is found then the process must be stopped and a number of envelopes and contents must be manually removed to determine the extent of the error and then the process restarted.

Those mail out items which are incorrect must be reprinted and inserted at a 10 later time. As small batches of reruns are inefficient, often a rerun is delayed until a significant number of mail out items require reprocessing. This causes logistical problems as composite lists of errors must be maintained. In addition, if pre-printed envelopes are required for the re-run then these must be re-sourced either from a warehouse store or supplier.

15 Another disadvantage of the overall process is that the process data file 120 is generated second hand from the original database 1 via the print file 10. This increases the likelihood of the process data file 120 becoming mismatched to the database 1. In some instances, bulk mail out items may be produced 20 according to the print file 10 but due to a mismatch between this and the process data file 120 these will appear to be errors. Clearly, a process which only requires one master file sourced from the database is preferable.

25 One attempt to address these issues is to use envelopes which contain a transparent window. In this process, the address information is printed onto the inserted material which is folded and oriented to display the address through the window. This negates the requirement to print the address information on the envelope. However, these window envelopes also have a number of disadvantages including increased cost over standard envelopes 30 and a lack of security due to the contents of the envelope being viewable on the occasion where information has been incorrectly inserted into the

envelope. Another significant issue is that consumers associate window faced envelopes with bills and therefore these types of envelope are not favoured for the delivery of marketing material.

5 In addition use of window envelopes does not address another serious disadvantage of all the bulk mailing processes outlined herein which is the expense of procuring and maintaining separate equipment for handling the envelopes and inserted material and also the associated expense with warehousing and auditing of these envelopes.

10

Accordingly it is an object of the invention to provide a method which efficiently reduces the scope for mismatching of envelopes and related contents in bulk mail out processes

15 It is a further object of the invention to provide a method which reduces the types of handling apparatus required in bulk mailing processes.

#### **SUMMARY OF THE INVENTION**

In a first aspect the present invention accordingly provides a method for  
20 forming a document set, said document set formed from rectangular sheets of the same size and including an envelope sheet and at least one insert sheet, the method including the steps of:

- printing said envelope sheet with envelope information, said envelope information including a unique code identifier;

25

- printing each of said at least one insert sheets with insert information, said insert information including a unique code identifier, and
- collating said envelope sheet and at least one insert sheet to form said document set.

30 The advantage of this method is that a document set is initially formed wherein each sheet, whether it be an insert or envelope sheet, is uniquely

marked before further processing. Clearly, this allows more convenient tracking of each sheet and further ensures that insert sheets are correctly inserted into the corresponding envelope. Another advantage of this method is that since all sheets are the same size then only handling apparatus that is 5 capable of handling one size of sheet is required to further process the document set to produce a bulk mail item thus reducing significantly capital expense.

10 Preferably said unique code identifier identifies whether a printed sheet is an envelope sheet. By coding whether a sheet is an envelope sheet within the unique code more sophisticated checking may be performed further ensuring the accuracy of the process. Preferably said unique code identifier printed on said envelope sheet includes the number of at least one insert sheets 15 associated with said envelope sheet to form said document set. Again by including this information more sophisticated document set self referencing consistency checks can be performed when producing the bulk mail item.

20 Preferably, the steps of printing the envelope sheet, printing the at least one insert sheet and collating the envelope sheet and at least one insert sheet are accomplished using a common printer. This has the clear advantage of further simplifying the production process as printing and collating essentially occur in one step.

25 In a second aspect, the present invention accordingly provides a method for forming a document set, said document set formed from rectangular sheets of the same size and including an envelope sheet and at least one insert sheet, the method including the steps of:

30

- applying an adhesive layer to at least one side of said envelope sheet in a predetermined pattern, said pattern arranged to provide adhesive means for an envelope formed from said envelope sheet when said envelope from said envelope sheet is re-used;

- printing said envelope sheet with envelope information, said envelope information including a unique code identifier;
- printing each of said at least one insert sheets with insert information, said insert information including a unique code identifier, and
- 5 • collating said envelope sheet and at least one insert sheet to form said document set.

In a third aspect, the present invention accordingly provides a method for producing a bulk mail item from the document set described in the preceding 10 aspects, said method including the steps;

- wrapping the envelope sheet about the at least one insert sheet to form an envelope.

#### **BRIEF DESCRIPTION OF THE DRAWINGS**

15 An illustrative embodiment of the present invention will be discussed with reference to the accompanying drawings wherein:

FIGURE 1 depicts a known method of producing bulk mail items

FIGURE 2 depicts a method of producing bulk mail items according to a preferred embodiment of the invention for producing bulk mail items.

20 FIGURE 3 depicts an envelope sheet illustrating the printed envelope information and also including the position and configuration of glue strips.

FIGURE 4A depicts steps 1 to 6 of a figurative representation of producing a bulk mail item according to a preferred embodiment of the present invention

FIGURE 4B depicts steps 7 to 16 of a figurative representation of the method 25 illustrated in Figure 4A

#### **DESCRIPTION OF PREFERRED EMBODIMENT**

Referring now to Figure 2, a print file 200 containing personalised information relevant to each mail item such as names and addresses is generated from

30 database 1. Also generated in print file 200 is a unique code to identify each of the sheets of paper being printed which will form the document set 220. This

code can also include further information such as whether a printed sheet is an envelope or insert sheet and in this case the envelope sheet code may also include the number of associated insert sheets associated with that envelope sheet to form the mail out item.

5

Printer 210 employing the information contained in print file 200 prints both the envelope sheet and insert sheets from cut sheet of a common size producing a personalised document set 220. Typically printer 210 will be a high speed digital laser printer which will print and collate document sets as

10 a single operation. Alternatively a number of different printers may be used and the sheets collated as a separate step. As all the sheets of paper are of the same size this still significantly reduces the complexity of any handling operation. After formation of the document set no further printing is required unlike the standard systems where insert sheets and envelopes are printed at

15 different stages of the process.

Figure 3 illustrates an example of a printed envelope sheet suitable for use as a reply paid envelope after processing by wrapping machine 231. Central rectangular area 10, including address 11, makes up the front face of the

20 envelope after wrapping. In this instance a number high pressure glue lines 20, 30, 40 50, 60 and 70 are included as part of the envelope sheet. These can be activated as part of wrapping the envelope in wrapping machine 230 or alternatively a suitable adhesive may be applied as part of the wrapping process. Top section 400 and bottom section 500 are folded about the insert

25 sheets to form the back face of the envelope. Left section 600 and right section 700 form side flaps of the finished envelope. In this instance the envelope sheet includes a strip 800 or 810 of re-wettable glue positioned so that the left side flap may be sealed when reused as a reply paid envelope. Clearly, as would be apparent to those skilled in the art the positioning of such a glue

30 strip can be varied according to the type of envelope. In one embodiment the glue strips may be included on customised paper blanks which are to be

printed as envelope sheets. As can be readily appreciated printing by a digital printer allows sophisticated colour graphics to be printed on the envelope sheet thus removing the requirement to have pre-printed sheets material with all the associated storage and auditing issues.

5

Wrapping machine 230 separates the envelope sheet from the insert sheets and wraps the inserts in the process forming mail out item 240 which is then further sent to the mail system 250. At each stage of the process the integrity of the document set can be checked by scanning 260 the unique code printed 10 on each sheet. This checking procedure may be as simple 221 as ensuring that each printed sheet is sequentially numbered in the document set 220. Any missing sheet will imply a printing or handling error. More sophisticated integrity checking may include checking that the separated sheet which is to form the envelope in the wrapping machine 230 is marked with a code 15 indicating that the sheet is indeed an envelope sheet.

The wrapping machine 230 in another embodiment may positively test 231 for the identity of the envelope sheet and furthermore count off the number of insert sheet as stipulated by the code on the envelope sheet. However, in all of 20 these cases scanning and checking of the codes provides a self referencing consistency check without having to refer to the print file 200 or similar file. This greatly simplifies the integrity checking process as can be readily appreciated when comparing Figure 1 which illustrates a standard system and Figure 2 which illustrates a system embodying a preferred embodiment 25 of the invention.

The envelope and contents 240 can be further checked 241 by scanning the envelope 241 to ensure that this envelope has been processed and sent to the mail system 250. This is also useful in the case where a record of completed 30 mail out items is required for scheduling and auditing purposes.

In the event of code scanning 260 identifying an error the associated document set or mail out item can be out sorted 270 and a manual integrity check 280 performed against the print file 200 if required. As problem document sets can be easily identified and removed more efficiently and

5 reliably the accuracy of the entire process is improved. In addition as the formation of document sets is a simple printing and handling operation any incorrect mail out items found can be identified and simply rescheduled at the current batch of processing.

10 Figures 4A and 4B illustrates figuratively the process of

1. applying glue to a wrapping sheet in a predetermined pattern;
2. processing the data to be printed on the envelope sheet including fixed and variable information and then orientating this data to take into account the diagonal positioning of the

15 insert sheets;

3. to 5. placing envelope and insert sheets in appropriate printer trays;

6. printing sheets;

7. to form a collated document set;

8. separating envelope (wrapping) sheet from document set and

20 positioning appropriately to receive insert materials;

9. to 11. folding insert sheets and placing these and any other insert materials onto envelope sheet, and

12. to 16. wrapping the envelope sheet about the insert sheets to form a bulk mail item.

25

Although a preferred embodiment of the method and apparatus of the described in the foregoing detailed description, it will be understood that the invention is not limited to the embodiment disclosed, but is capable of numerous rearrangements, modifications and substitutions without departing 30 from the scope of the invention as set forth and defined by the following claims.

It will be understood that the term "comprise" and any of its derivatives (eg. comprises, comprising) as used in this specification is to be taken to be inclusive of features to which it refers, and is not meant to exclude the presence of any additional features unless otherwise stated or implied.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS

1. A method for forming a document set, said document set formed from rectangular sheets of the same size and including an envelope sheet and at least one insert sheet, the method including the steps of:
  - printing said envelope sheet with envelope information, said envelope information including a unique code identifier;
  - printing each of said at least one insert sheets with insert information, said insert information including a unique code identifier, and
  - collating said envelope sheet and at least one insert sheet to form said document set.
2. A method for forming a document set as claimed in claim 1 wherein said unique code identifier identifies whether a printed sheet is an envelope sheet.
3. A method for forming a document set as claimed in claim 2 wherein said unique code identifier printed on said envelope sheet includes the number of at least one insert sheets associated with said envelope sheet to form said document set.
4. A method for forming a document set as claimed in any one of the preceding claims wherein the steps of printing the envelope sheet, printing the at least one insert sheet and collating the envelope sheet and at least one insert sheet are accomplished using a common printer.
5. A method for forming a document set as claimed in any one of the preceding claims wherein said envelope information is printed on one side of said envelope sheet.

6. A method for forming a document set, said document set formed from rectangular sheets of the same size and including an envelope sheet and at least one insert sheet, the method including the steps of:

- applying an adhesive layer to at least one side of said envelope sheet in a predetermined pattern, said pattern arranged to provide adhesive means for an envelope formed from said envelope sheet when said envelope from said envelope sheet is re-used;
- printing said envelope sheet with envelope information, said envelope information including a unique code identifier;
- printing each of said at least one insert sheets with insert information, said insert information including a unique code identifier, and
- collating said envelope sheet and at least one insert sheet to form said document set.

7. A method for producing a bulk mail item from the document set claimed in any one of the preceding claims, said method including the steps;

- wrapping the envelope sheet about the at least one insert sheet to form an envelope.

Dated this 7<sup>th</sup> day of April, 2003.

ENVELOPMENTS PTY LTD  
By its Patent Attorneys  
MADDERNS



Figure 1

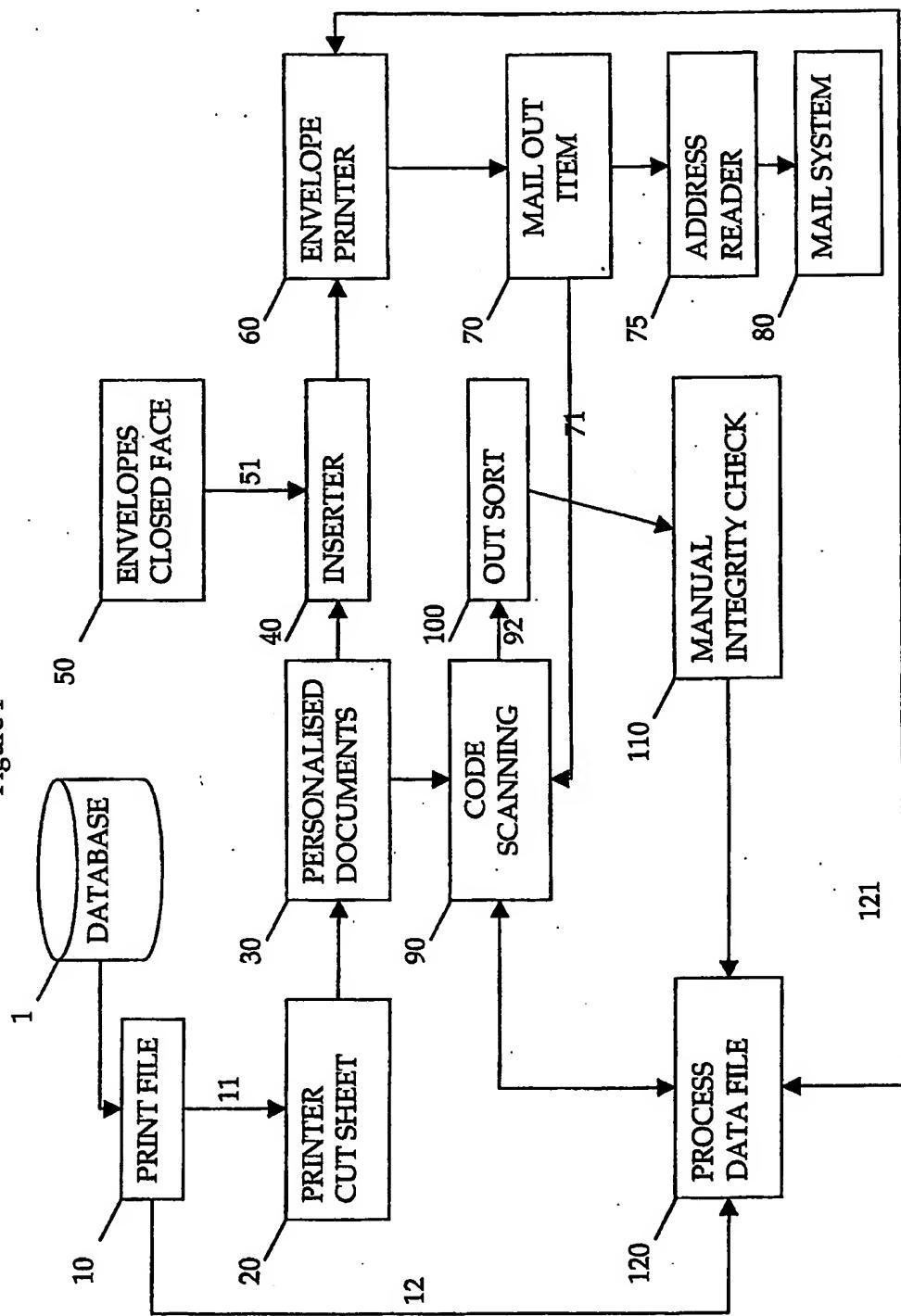


Figure 2

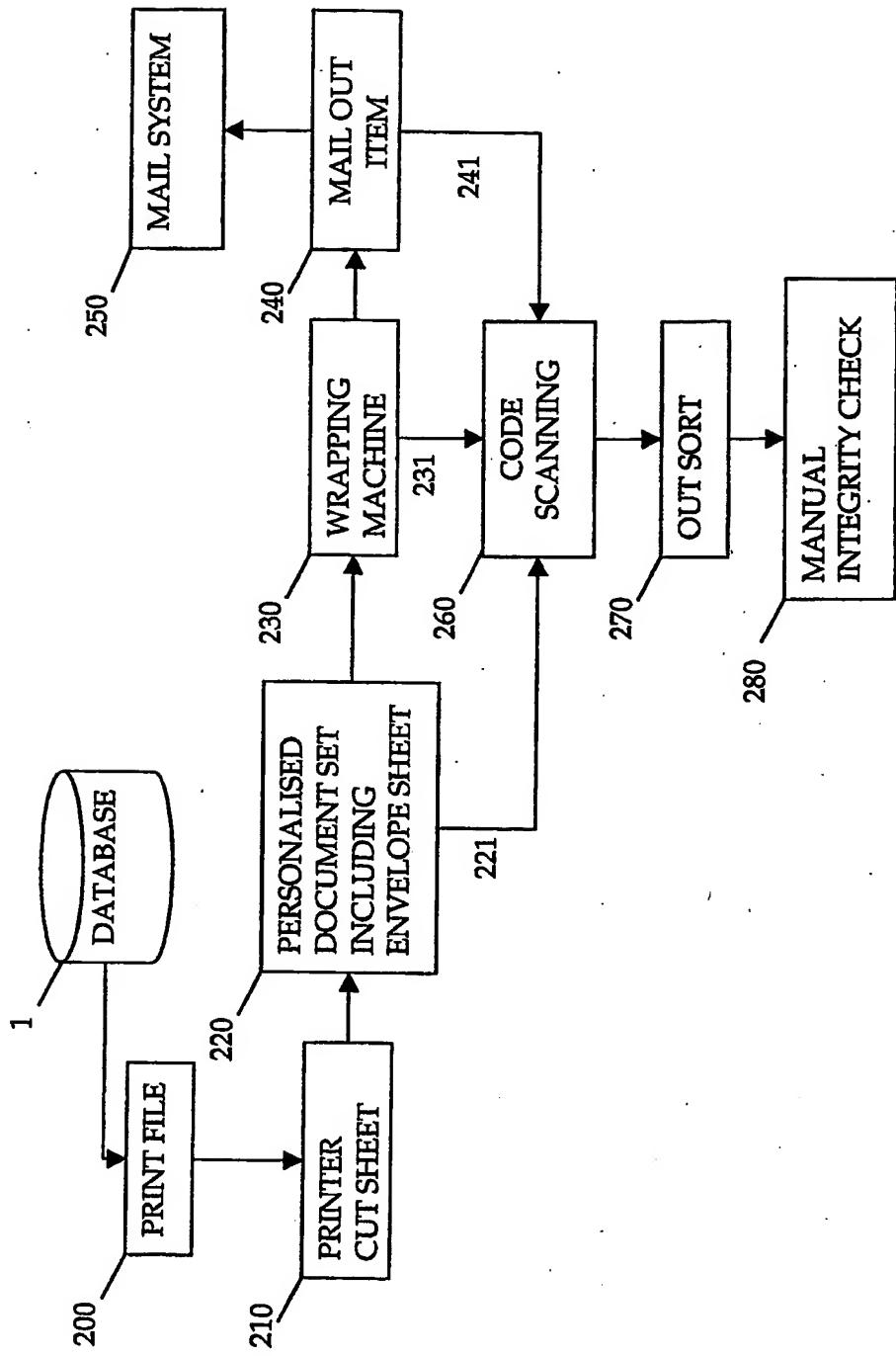


Figure 3

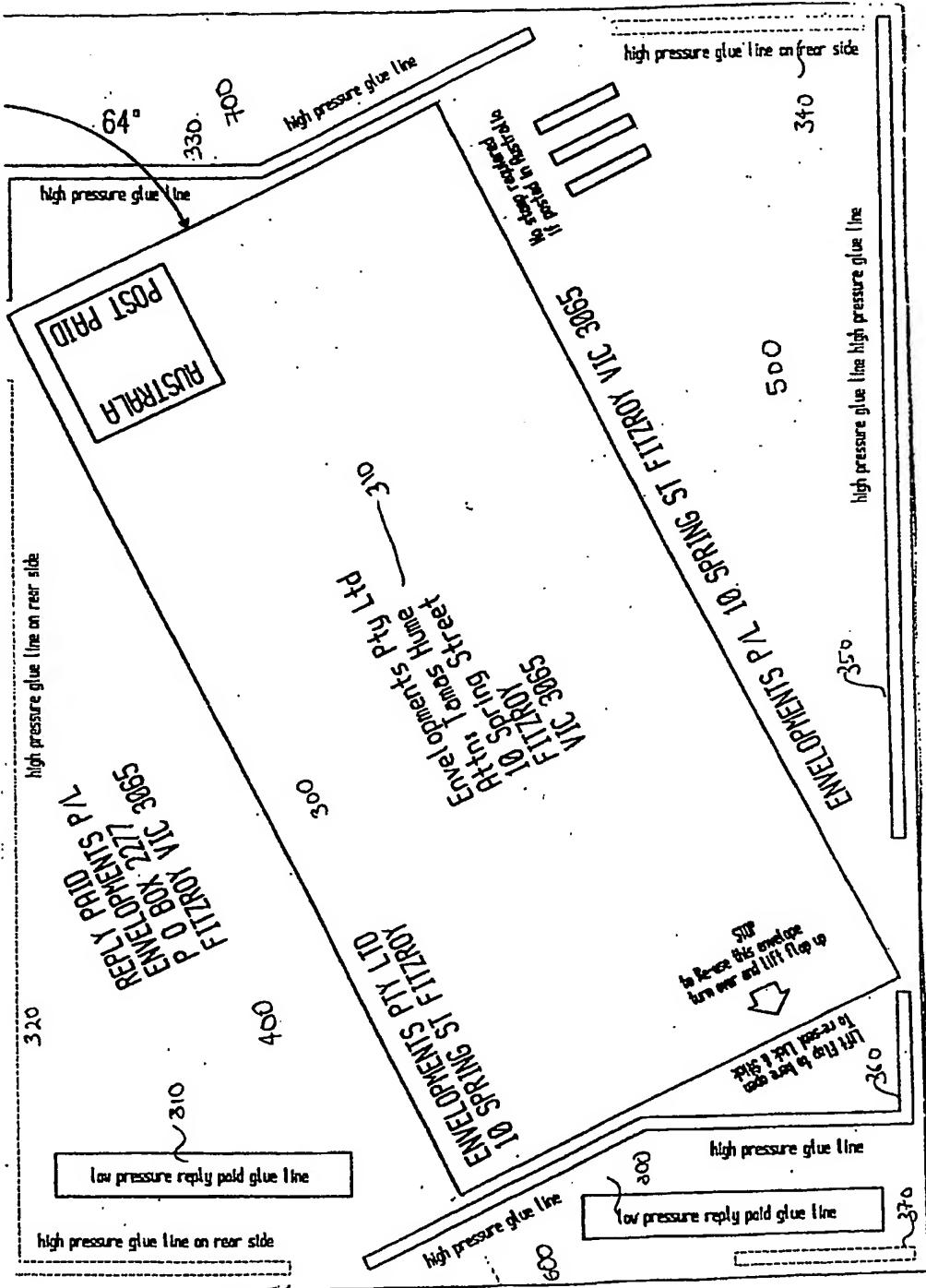


Figure 4A

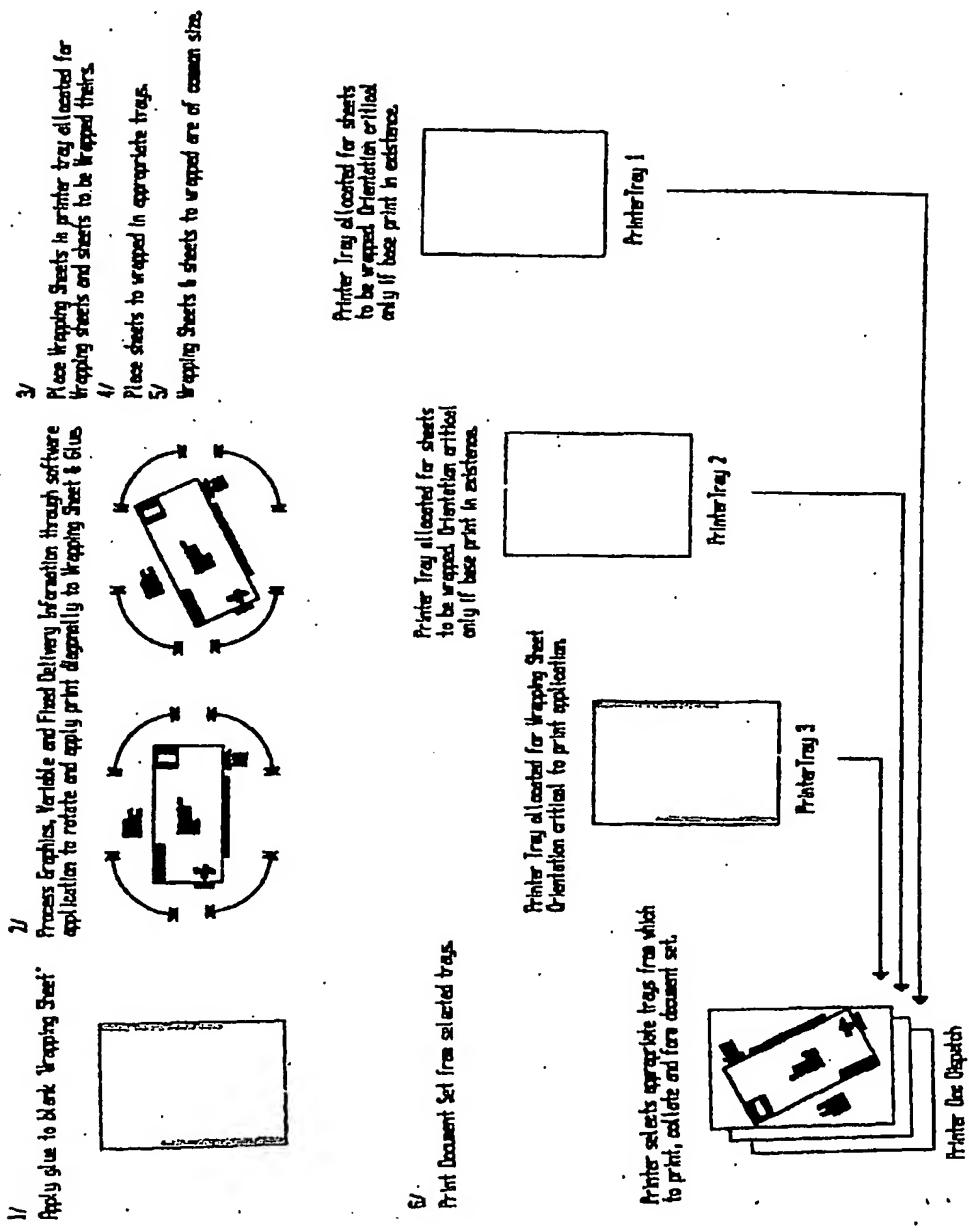
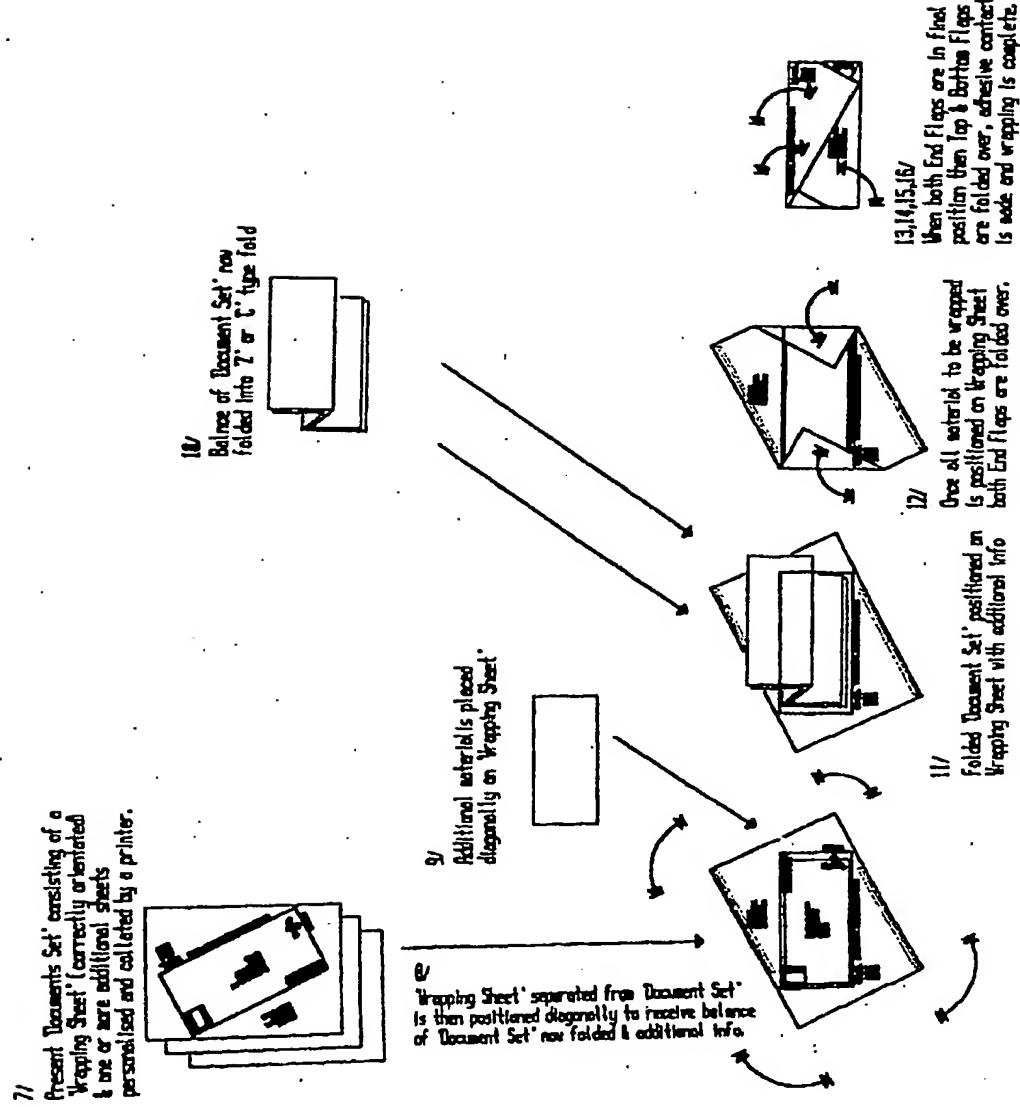


Figure 4B



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